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Client's ref: P-4982-001-0000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICERECEIVED
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In re Application of: N. HIROSE et al.: Art Unit : 1756

Appln. No. : 10/056,577

Filed : January 24, 2002

: Examiner : C. D.
RodeeTitle : TONER FOR FORMING
ELECTROSTATIC IMAGE
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

S i r:

I, Hiroshi Yamazaki, hereby declare and say as follows:

1. I am one of the Inventors of the present Invention.
2. I received a Masters Degree in Applied Chemistry from Yokohama National University in March 1979. Since April of 1979, I have been employed by Konica Corporation, the Assignee of the present Invention. During my employment at

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Konica, I have been engaged in research and development of electrophotographic materials.

3. I am aware that the present Invention has been rejected based on Nozawa (US 6,555,281) in view of Rimai (US 4,737,433). The Examiner has relied on Rimai to teach the ratio of toner particles having a circle corresponding to a diameter of 0.60 to 1.00 μm . Tests have been performed and are reported herein to demonstrate that the surprisingly unexpected superiority of toner particles with the claimed ratio of less than 5.0% in number having a circle corresponding diameter of from not less than 0.60 to less than 1.00 μm . These tests were performed by myself or under my direct supervision and control.
4. I believe that Example 70 of Nozawa is the closest prior art to the present Invention, thus, the toner particles of Example 70 of Nozawa were prepared in accordance with the description of Examples 69-71 in Col. 44 of Nozawa. Since Nozawa is silent concerning the type of pulverization device and pneumatic classifier, I type mill IDS-2 was employed as the pulverizer (produced by Nippon Pneumatic Mfg. Co., Ltd.) and Mikroplex 132 MP was employed as the pneumatic classifier (produced by Yaskawa Electric

Manufacturing Co., Ltd.). A coarsely crushed melt-kneaded product was finely pulverized using the I type mill IDS-2 pulverized under compressed air pressure at 6.0 kg/cm²G at a feed supply rate of 13 kg/hr. After pulverization, classification was performed using the Mikroplex 132 MP classifier under a rotation rate of 12,000 rpm and a guide vane angle of 7.5°. The prepared toner particles were labeled "Nozawa 2" in the Table, below.

5. A second toner was prepared and labeled Nozawa 3. Nozawa 3 was prepared in the same manner as Nozawa 2 except that guide vane angle was changed to 7.8° so as to produce a toner that had the ratio of less than 5% in number having a circle corresponding diameter of from not less than 0.60 to less than 1.00 μm .
6. The toners of Nozawa 2 and 3 was evaluated and the results of the evaluations are shown in the Table, below. The ratio of toner particles having a diameter of 0.60-1.00 μm was measured using the analyzing apparatus FPIA-2000 described at page 11, lines 17-22 of the present invention. SF-1 and SF-2 were measured by observing 100 particles using an electron microscope with a 2000x magnification and analyzing the image as described at page 11, lines 3-11 of

the present Invention. For Nozawa 2 and 3, size distribution N was measured using the COULTER MULTICIZER having the 100 μm aperture described in Col. 20 of Nozawa.

	D4 (μm)	N($\leq 4\mu\text{m}$) %	0.60-1.00 μm (%)	SF-1	SF-2	SF-1/SF-2
Nozawa 2	7.1	8.2	5.8	162	138	1.17
Nozawa 3	7.1	8.1	4.8	162	138	1.17

7. As shown in the Table, Nozawa 2 prepared in accordance with the teachings of Nozawa had a ratio of toner particles of 5.8%, while Nozawa 3 had a ratio of 4.8%.
8. ~~Using both Nozawa 2 and 3, cyan toner samples were prepared~~
Using both Nozawa 2 and 3, cyan toner samples were prepared in accordance with Example 39 of Nozawa, Column 42, lines 25-45. During the toner preparation process, the shape factor did not change.
9. In order to demonstrate the difference between Nozawa 2 and Nozawa 3, the colored particles were used to make copies in the manner described in this Application on pages 46-49. The fog density and half tone unevenness were evaluated and are reported in the Table, below.

	Fog density		Half tone unevenness	
	Initial	After 50,000	Initial	After 50,000
Nozawa 2	0.001	0.018	B	D
Nozawa 3	0.001	0.004	A	B

10. As can be seen, the samples differed only in the ratio of toner particles having a circle corresponding to a diameter of 0.60 to 1.00 μm . However, this difference is significant when viewing the fog density after 50,000 copies, and the half tone unevenness after 50,000 copies.
11. I find it surprising and unexpected that such a small change in the ratio of toner particles having a circle corresponding to a diameter of 0.60 to 1.00 μm to result in such a dramatic difference in the fog density and half tone unevenness after 50,000 copies.

It is declared by undersigned that all statements made herein of undersigned's own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the U.S. Code; and that such willful false statements may

willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the U.S. Code; and that such willful false statements may jeopardize the validity of this Application or any patent issuing thereon.

Hiroshi Yamazaki
Hiroshi Yamazaki

Dated: This 2nd day of August, 2006.

DCL/mr